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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,882	09/19/2003	Darrell Rinerson	UNTP027	6771
42958	7590	04/14/2006	EXAMINER	
UNITY SEMICONDUCTOR CORPORATION			WILSON, ALLAN R	
250 NORTH WOLFE ROAD			ART UNIT	
SUNNYVALE, CA 94085			PAPER NUMBER	
			2815	

DATE MAILED: 04/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/665,882

Applicant(s)

RINERSON ET AL.

Examiner

Allan R. Wilson

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-29 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,759,249 to Zhuang et al. (“Zhuang”) of record.

With regards to claims 1, 6 and 28, Zhuang illustrates in figures 1-4 (entire document), particularly figure 1, a conductive bottom electrode 14;

a multi-resistive state element 16 arranged on top of and in contact with the bottom electrode such that a bottom interface is created, the multi-resistive state element having a resistance; and

a conductive top electrode 18 arranged on top of and in contact with the multi-resistive state element such that a top interface is created;

wherein the resistance of the resistive memory device may be changed by applying a first voltage having a first polarity across the conductive electrodes and reversibly changed by applying a second voltage having a second polarity across the conductive electrodes (which is a use of the device); and

wherein at least the top interface 16b or the bottom interface 16a is subjected to a at least one treatment (col. 3, lines 13-37) primarily directed towards changing properties of the at least one interface;

wherein the at least one treatment is at least partially caused through deposition of an additional layer (e.g. 16b) in between the multi-resistive layer (e.g. 16a) and one of the conductive electrodes 18 (per present application para. 0054).

Note: Zhuang discloses in col. 3, lines 28-29, two to five layers of PCMO can be used. For example, if three layers are used then there would be a central multi-resistive layer with two “interface layers” on the top and bottom.

With regards to claims 2-5 and 7-27, the examiner had to assume what the product would be by the process claimed. For example, in claim 2 it was assumed that the product was an interface layer with properties different from the other layers. The claim that it was “at least one treatment is an ion implant” was not considered to have full patentable weight. A “product by process” claim is directed to the product per se, no matter how actually made, MPEP 2113 “Product-by-Process Claims,” In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ 161; In re Wertheim, 191 USPQ 90; In re Marosi et al, 218 USPQ 289; and particularly In re Thorpe, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a “product by process” claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in “product by process” claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear.

Regarding claims 3, 4, 8, 9 and 13, Zhuang discloses in col. 3, lines 13-33, the at least one treatment is exposure to an anneal and the anneal is performed while or after the multi-resistive state element is formed.

Regarding claims 5, 7, 11 and 12, Zhuang discloses in col. 3, lines 23-33, the at least one treatment is exposure to a gas (oxygen).

Regarding claim 24, Zhuang discloses in col. 3, lines 35-37, both the bottom interface 16a and the top interface 16b (for three to five layers) are subject to a treatments, the treatments being different from each other as evident in 16a being nano-crystals and 16b being amorphous.

Regarding claims 28 and 29, Zhuang discloses in col. 3, lines 35-37, the at least one layer that is fabricated to be crystalline is fabricated to be polycrystalline (nano-meter size crystals).

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-29 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from an examiner should be directed to Primary Examiner Allan Wilson whose telephone number is (571) 272-1738. Examiner Wilson can normally be reached 6:00-4:30 Tuesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on (571) 272-2298. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'A. Wilson', with a stylized flourish at the end.

Allan R. Wilson  
Primary Examiner  
6 April 2006